An attempt to measuring fossil fuel subsidies by way of 'official statistics' - the case of the Netherlands, 2021

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1. Summary

As their phasing out is expected to support the abatement of greenhouse gas emissions, fossil fuel subsidies have been debated on many occasions. While the current definition of a subsidy in the European System of National Accounts (ESA 2010) refers only to the direct transfers from governments to producers, most of the fossil fuel subsidies under discussion concern tax exemptions and rebates. Such 'implicit' subsidies remain unobserved in the national accounts. To be able to analyze both implicit and explicit fossil fuel subsidies, a broader scope is needed.

The purpose of this report is to examine the role of official statistics in measuring both implicit and explicit fossil subsidies. It is challenging for statistical bureaus to objectively calculate fossil fuel subsidies as their size will depend on a variety of choices and assumptions such as:

- the types of tax differentiation that is brought into scope, and,

- and the selection of reference rates by which to define the size of tax rebates.

In fact, most implicit fossil fuel subsidies are about answering the question: 'what is the amount of taxes that should have been payed?'

The international statistical standards provide little guidance on how to account for environmentally harmful subsidies as they are not well equipped to answer the question above. Besides, while there is an international classification of environmentally beneficial expenditure, a classification of environmentally harmful expenditures is still missing.

In this report we explore the issue of fossil fuel subsidies from a statistical point of view. Even though we have done similar calculations as in other reports presenting the case of the Netherlands, the magnitude of these estimates is not the key message we want to bring forward. This report should be about the methodology behind these estimates and the role of statistics in bringing these estimates, or meaningful alternative indicators, forward.

2. Introduction

After a range of protests against fossil fuel subsidies in the Netherlands, the topic gained considerable media and political attention. Recent research hints at large amounts of taxation discounts and exemptions of a size of 37.5 billion euros as estimated by Milieudefensie et al. (2023), up to 39.7 - 46.4 billion euros as reported by the Ministry of Finance (2023).

The most recent IPCC report (2023) advises governments to remove fossil fuel subsidies as this is expected to put into place the required incentives to reduce CO2 emissions, elevating at the same time government revenue. Yet, removing fossil fuel subsidies can have negative impacts on the most vulnerable groups in society. Governments may be able to mitigate these effects by redistribution of the additionally obtained tax revenues. Rationalizing ineffective fossil fuel subsidies from an environmental point of view is not only advised by IPCC but is also addressed by the Sustainable Development Goals (SDG 12.C): "the amount of fossil-fuel subsidies per unit of GDP (production and consumption)". The United Nations Environmental Program (UNEP) recommends countries to collect data on explicit and implicit fossil fuel subsidies, as this is expected to support the removal of fossil fuel subsidies.

Policymakers may be hesitant to abandon fossil fuel subsidies for the sake of carbon leakage, i.e. the relocation of businesses and their emissions to other jurisdictions with less stringent tax regimes. This may lead to an equivalent or even higher level of CO2 emissions on a global level.

A recent resolution of the EU Parliament calls for an end of all direct and indirect fossil fuel subsidies, at national, EU and global levels, "as soon as possible and by 2025 the latest".[1] On the path to a climate-neutral Europe by 2050, a level playing field for European companies will be ensured by the new Carbon Border Adjustment Mechanism (CBAM). This mechanism implies that for imported products a carbon price will be levied at the EU's borders which may prevent carbon leakage.

This report investigates the role of 'official statistics' in putting fossil fuel subsidies into numbers. Fossil fuel subsidies may take various forms. In case the subsidy (or income transfer) represents a direct compensation for the expenses on fossil energy use such as "het energieprijsplafond", a temporary price cap in the Netherlands to protect households from extreme energy price increases, related flows will be statistically observed and subsequently recorded in government finance statistics and in the national accounts.

The statistical measurement of a fossil fuel subsidy as the outcome of tax exemptions or differential tax systems will be more challenging. According to the international accounting standards (2008 SNA, ESA 2010), taxes will be recorded when the activities, transactions or other events occur which create the liabilities to pay taxes. The extent to which the magnitude of these liabilities differ from one actor to another is of no concern. The accounts are expected to record taxes according to the prevailing taxation regimes.

On the other hand, the discussions on fossil fuel subsidies clearly indicate that tax regimes may differ between the various kinds of energy consumers in an economy. This report investigates the extent to which an (extended) accounting approach is applicable to the recording of fossil fuel subsidies in the Netherlands. Chapter 3 deals with the methodological aspects of such an

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[1] https://www.europarl.europa.eu/news/nl/press-room/20231117IPR12108/cop28-meps-want-to-end-all-subsidies-for-fossil-fuel-globally-by-2025

accounting approach. The subsequent chapter (4) presents the main findings. Chapter 5 winds up with conclusions and recommendations for further work.

3. Methodology

3.1 Definition

As the preserver of a common set of international trade rules, the World Trade Organization (WTO) defines a subsidy as[2] :

1.   a direct transfer of funds (e.g., a grant, loan, or infusion of equity);

2.   a potential transfer of funds or liabilities (e.g., a loan guarantee);

3.   foregone government revenue (e.g., a tax credit); or

4.   the purchase of goods, or the provision of goods or services (other than general infrastructure)

The European Commission (EC, 2023) follows in the 'Guidance document Environmental Harmful Subsidies (EHS)' the following definition:

1.   A subsidy is considered a government measure that confers an advantage on specific consumers or producers, in order to supplement their income or lower their costs; and

2.   A subsidy is considered harmful to the environment if it results in significantly increased negative environmental impacts due to the existence of the subsidy.

The United Nations Environmental Program (UNEP, 2019) defines in reference to SDG 12.C a fossil fuel subsidy along similar lines.

It may not be straightforward to demonstrate a 'significantly increased negative impact' of an existing subsidy. Another way to look at it is that a subsidy may be considered harmful when it deliberately lowers the prices of products whose consumption is considered socially unfavorable. Contrary to ESA 2010, according to the EC guidance on EHS, subsidies may apply to both producers and consumers.

Typical examples of subsidies complying to this definition are tax exemptions, tax discounts and other forms of tax reductions on harmful products. The complete omission of a tax on products with undesirable environmental impacts is not a harmful subsidy in the sense that the 'advantage element' (i.e., a proper tax reference rate) in this particular case is missing. And this may be confusing from an international comparability point of view. A country without any fossil fuel taxation (or direct subsidies) will report zero fossil fuel subsidies. But a country with a significant regular tax rate on fossil fuels, yet allowing for a limited number of tax exemptions, will be reporting significant amounts of fossil fuel subsidies.

The statistical office of the EC, Eurostat (2022), provides guidance on so-called Potentially Environmentally Damaging Subsidies (PEDS) and advocates the data collection of PEDS among EU member states. While the scope of PEDS is potentially broader, by covering in addition to climate change also other environmental dimensions, implicit transfers are being excluded. It is argued that implicit transfers such as tax exemptions and discounts are not directly observable. So, the definition of PEDS is restricted to explicit transfers which are directly observable from the government budgets. EU member states are invited to collect in addition data on implicit transfers, even though the PEDS methodology does not provide the guidelines to do so.

To support monitoring of the SDG 12.c.1, the UNEP (2019) provides guidance on the data collection of implicit subsidies but does not explain several of the specific difficulties encountered in the Netherlands such as the selection of the appropriate reference rates in the case of a system of multiple tax brackets.
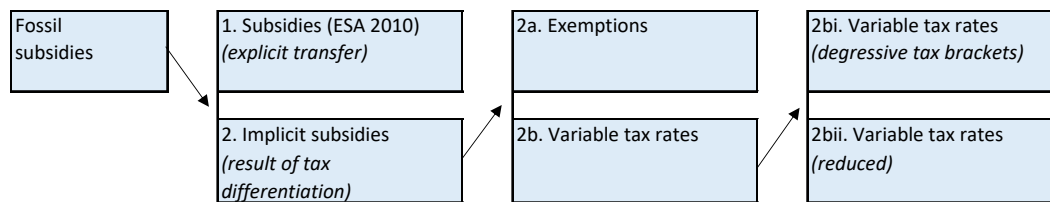
In order to address these measurement challenges, in this report we will explore the feasibility of estimating both the explicit and implicit fossil fuel subsidies.

3.2 Discussion

Almost all of the fossil fuel subsidies referred in the case of the Netherlands are considered implicit subsidies, and are for that reason not observable from government finance statistics. One exception is the subsidy arrangement for indirect costs of EU ETS which is a subsidy in the ESA sense. Another exception is the 'prijsplafond', an event that was implemented after 2021, the reference year of this report.

An example of an unobserved, or unrecorded transfer in national accounting terms, is the issuing by governments of ETS emission permits for a price equal to zero. Other Dutch examples are the energy tax exemptions or discounts on certain uses of gas and electricity. One may even consider including tax exemptions on (non-electric) motor car purchases and ownership as fossil fuel (related) subsidies.

Figure 1
Various forms of fossil fuel subsidies in the cases of energy taxes in the Netherlands

Fossil subsidies	1. Subsidies (ESA 2010) *(explicit transfer)*	2a. Exemptions	2bi. Variable tax rates *(degressive tax brackets)*
	2. Implicit subsidies *(result of tax differentiation)*	2b. Variable tax rates	2bii. Variable tax rates *(reduced)*

3.2.1 Subsidies on the indirect use of fossil fuels

Within the realm of implicit fossil fuel subsidies, another distinction is whether or not the subsidy relates to energetic (combustion) or non-energetic (for the manufacturing of plastics or fertilizer) use of fuels. Only combustion leads to *direct* CO_2 emissions while in the case of non-energetic uses, CO_2 emissions are expected at a later stage, in other words the CO_2 impact is considered *indirect*. Another example of an indirect subsidy is the already mentioned tax exemptions on motor car ownership as such exemptions may be able to influence fuel purchases in an indirect way.

Even though subsidies on fossil dependent products cannot be directly linked to the use of fossil fuels, indirect measures may comply to the EHS definition of a fossil fuel subsidy as they are expected to increase fuel purchases. In their estimations, the Ministry of Finance (2023) includes the subsidies on several indirect uses. The Netherlands Environmental Assessment Agency and Netherlands Bureau for Economic Policy Analysis (PBL & CPB, 2023) only includes the fossil fuel subsidy related non-energetic fossil energy use. According to the Ministry of Finance (2023) these indirect subsidy elements amount to 17,6 billion euro, which may determine partly the differences in fossil fuel subsidies reported in both reports.

3.2.2 Tax rate differences between products

Milieudefensie et al. (2023), Ministry of Finance (2023) and CPB & PBL (2023) attempt to quantify tax rate differences between different types of energy products such as gas vs. electricity, or

petrol vs. diesel. Such tax rate differences are subsequently quantified as fossil fuel subsidies. It can be argued that differences in tax rates generate a relative price advantage of one product over the other. Arguments against capturing inter product taxation differences are both conceptual and practical. A conceptual reason not to include price differences is consistency. With one particular set of closely substitutable products in mind, there may not be good arguments not to broaden the tax comparisons between a broader variety of lesser substitutable products.

Particularly when substitution involves additional costs, the estimation of taxation differences becomes complex and subject to increasing arbitrariness. A few examples are worked out in section 4.4 of this report with the purpose of highlighting the implications of this approach.

Box 1
Tax rate differences between two products: petrol and diesel

In this box we expose three options (there are probably more) to quantify the implicit subsidies due to tax differences between substitutable products.

Let us assume an economy of two individuals in which the government levies excise taxes on motor engine fuels, such as petrol and diesel. Tax rates vary between the two products as follows.

Excise tax rates	
Petrol	€0.82 / liter
Diesel	€0.53 / liter

Individual 1 has a car running on petrol, using 1000 liters of petrol per year. Individual 2 has a car running on diesel, using 800 liters of diesel per year. They both travel equal distances, let's say a 10,000 km a year.

a) The fossil fuel subsidy could be estimated as the price difference multiplied by the consumption of diesel, (€ 0.82 – € 0.53) x 800 = € 232.

As the CO_2 emissions per liter of combusted petrol and diesel differ, this estimation may seem wrong. Also the amount of diesel needed to drive a 10,000 km differs from the amount of required petrol.

b) Another way to estimate the tax difference is to link the taxes to CO_2 emissions. Suppose a liter of petrol combustion generates 2.269 kg CO_2. A liter of combusted diesel leads to 2.206 kg CO_2. The tax rates in terms of CO_2 emissions are as follows:

Tax rates in terms of emissions	
Petrol	€0.36 / kg CO_2
Diesel	€0.20 / kg CO_2

The fossil fuel subsidy could be calculated as:

The difference in taxes (petrol versus diesel) per unit of CO_2 multiplied by the sum of CO_2 emissions in the case of diesel:

(€ 0.36 - € 0.20) x 2085 = € 329.43

c) A third option would be to look at the taxes per kilometer driven (traffic performance):

Tax rates per km	
Petrol	€ 0.08 / km
Diesel	€ 0.04 / km

The difference in tax rate per kilometer multiplied by the number of kilometers driven:

(€ 0.08 – € 0.04) x 10,000 km = € 396.

Another issue further complicating the cross fuel comparison is that in the Netherlands taxes on motor car ownership tend to be higher for diesel vehicles than for petrol vehicles. These tax differences need be taken into consideration as well.

Moreover, it could be argued that when examining the tax rate differences between diesel and petrol, it would not make sense not to take into consideration the possible taxation differences with respect to LPG as well.

To conclude, cross product tax comparisons do have its challenges.

3.2.3 Value Added Tax (VAT)

Most governments levy VAT on energy products. The VAT represents a percentage of the purchaser's price including the excise and/or energy taxes. When a reduced excise tax rate applies, the VAT payable on that product will end up being lower as well. One may include the VAT such reductions as a fossil fuel subsidy as well. However, VAT payable on business purchases is refundable. This is why VAT probably plays an insignificant role in the calculation of fossil fuel subsidies and is for that reason ignored in this (and several other) report(s).

3.3 Fossil fuel subsidies in the National Accounts

The international system of national accounts, the 2008 SNA, and its EU version, the European System of Accounts (ESA 2010) follow a narrow definition of subsidies. According to the ESA 2010 (par. 4.30) "subsidies are current unrequited payments which general government or the institutions of the European Union make to resident producers." This implies that payments to households as consumers are outside the ESA scope of subsidies. The SNA and ESA make a distinction between subsidies on products and on production. The former is payable per unit of product, and will in this way lower the commodity's purchasers' price, while the latter is unrelated to the output provided but is instead intended to diminish the cost of production.

As already mentioned, implicit subsidies, which are the result of tax exemptions or discounts, remain principally unrecorded in the national accounts. This implies that alternative accounting conventions must be put into place in order to explicate these implicit subsidies. The ESA 2010 (1.72) recommends in certain cases the 'rearrangement' of transactions with the purpose of bringing out the underlying economic relationships more clearly. One type of rearrangement (there are more), which is particularly relevant when recording fossil fuel subsidies, is the so-called partitioning of transactions. Perhaps the most clear-cut example is the sales of goods which will usually constitute both the supply of goods and the supply of trade services. The output of the retailer represents the sum of trade margins while the output of the goods manufacturer represents the output of the sold goods. Another perhaps slightly more complex example is the payments for non-life insurance which constitute a payment of the insurance service provided and in addition the 'net non-life insurance premiums'. These are in the national accounts recorded as two separate transactions.

An implicit subsidy could be looked upon in a similar way. Let us assume the prevailing EU carbon permit price is €80 per ton of emitted CO_2. The government issues one permit for free after which the beneficiary company will instantly surrender this permit after having emitted one ton of CO_2. According to the current national accounts guidance, these events will remain unrecorded. In a way this may be conceived as peculiar because the company is granted a permit having a market value of €80. After having emitted one ton of CO_2, surrendering the pollution permit with a market value of €80 could be conceived as the payment of a pollution tax.

So, another way to look at this sequence of events is that the issuing of a permit for free constitutes in fact a subsidy (− €80) while its surrender constitutes, as argued, the payment of tax (+ €80). Obviously, the two cancel out and lead on balance to the same outcome as the ESA 2010 recording convention. But the proposed partitioning may provide a clearer picture on the economics behind these events in those cases where governments will (partially) issue permits for free.

The example above is rather straightforward. The notion of fossil fuel subsidies increases in complexity when tax rates vary based on the amounts of energy consumed. In the case of the Netherlands, large energy consumers often benefit from below average tax rates. In such cases, identifying the reference rate needed to quantify the benefits obtained by these large energy

consumers may become challenging or even arbitrary. The differences in results when making such decisions are explored in the next section of this report.

3.4 Frame of reference

In the Netherlands, tax brackets for natural gas and electricity exist in a regressive manner which implies average tax rates will decline as more energy is being consumed. It can be challenging to pinpoint the appropriate reference tax rate by which an implicit fossil fuel subsidy resulting from these tax rate differences must be estimated. Without these regressive tax brackets, all energy consumers would end up paying one and the same unit energy tax. In this case, the selected reference rate could be:

- a 'regular' rate, that is, the rate which would imply in the case of no exemption (thus depending on the amount of energy use per tax bracket).

- the first tax bracket rate, i.e. the highest rate in the Dutch system of regressive tax brackets.

- quantifying fossil fuel subsidies is also possible with a reference made to the external costs of CO2 emissions. The external costs refer to what the price 'should be' in case all externalities of fuel consumption are given a shadow price. CPB & PBL (2023) refer to this option as the external costs-based approach. The literature provides a wide range of options which make them less suitable in an 'official statistics' context. Also the UNEP seems to advise against such a method so this approach is not pursued in this report.

CPB & PBL (2023) take the regular rate as a reference while Milieudefensie et al. (2023) selected the first tax bracket.

Box 2
Difference between 'regular' and first bracket rates
Let us assume an economy in which the government levies a tax on the consumption of gas by producers. Two brackets are being applied. The first million m³ of gas consumption is taxed by a rate of 0.1 (first bracket). Above one million of m³, the tax rate will be 0.05 (second bracket).

	Brackets	
m³ gas	0-1 million	> 1 million
tax rate	0.1	0.05

The economy consists of two producers which are both consuming each year 2 million m³ of gas. Producer 1 is obliged to pay annually an amount of 150,000 of energy taxes. As the second million m³ of gas consumed is lower taxed than the first million m³, this tax rate difference could be considered a fossil fuel subsidy, which equals in this example 50,000.

producer 1
consumption = 2 million m3
actual payable taxes = 1 million x 0.1 + 1 million x 0.05 =   150000
fossil fuel subsidy = 1 million x (0.1 - 0.05) =   50000

Producer 2 is fully tax exempted. So, one may safely conclude that this producer is granted a fossil fuel subsidy as well. The size of this subsidy can be subject to debate. Making a reference to producer 1, the regular on average rate that applies to a producer consuming two million m³ of gas is ½ × (0.1 + 0.05) = 0.075. Taking this 'regular' rate, the fossil fuel subsidy granted to producer 2 amounts to 150,000. This approach ignores the fact that producer 1 is also granted a fossil fuel subsidy. Taking this into consideration, the reference rate should be the first bracket rate and in that case the subsidy for producer 2 will be 200,000.

In this report, the subsidies generated by regressive tax rates will be quantified by selecting an alternative reference rate exposing the withdrawal of a tax exemption or discount. The potential tax revenue will be estimated to be the revenue when the taxed energy consumption of the energy type in question was taxed according to the selected reference rate. The actual tax revenue will be subtracted from the potential revenue in order to obtain the fossil fuel subsidy.

In the case of tax exemptions, the regular rate and the first tax bracket will both be examined and the potential tax revenue will thus be estimated in two ways. Outcomes based on both options will be presented as under and upper bound estimates. For energy products to which a regressive tax structure does not apply, the reference rate will be the rate that would have applied in case of no exemption. If a specific tax rate for the energy product in question cannot be found, the rate of a similar kind of energy product will be used.

The fossil fuel subsidies will be calculated by following the so-called inventory approach as explained by CPB & PBL (2023). As a first step, all measures that are within scope will be categorized and labelled. Subsequently, for implicit types of subsidies, the fossil fuel subsidy will be calculated by applying the above mentioned methods. The subsidies are quantified on the basis of actual energy consumption levels and not on the basis of what consumption should have been in case a different tax regime would have applied. The implicit subsidy cannot be seen as foregone tax revenues of government, as behavioral effects are being ignored.

Data from the National Accounts will be used to obtain the actual tax revenues. Taxation rates are obtained from the website of the Dutch tax authorities. Data on energy use will be retrieved from the energy balances published by Statistics Netherlands. Another database on energy use is the energy accounts from Statistics Netherlands. This database contains slightly different numbers, as the energy accounts data is in correspondence with the national accounts. As this database does not provide data per industry branch and tax bracket, the energy balances are used instead. As previously explained, most of the fossil fuel subsidies measured in this report do not correspond with the definition of subsidies according to the international national accounting standards. Their recording in a national accounts framework would imply the following portioning:

1.   increasing the recording of taxes according to their potential revenues

2.   recording of the implicit subsidies

As a result, the net tax revenue (potential taxes minus implicit subsidies) remains unaltered.

4. Tentative findings for the year 2021

4.1 Quantification of fossil fuel subsidies

The outcomes in table 1 indicate that most fossil fuel subsidies in the Netherlands refer to tax exemptions. The largest fossil fuel subsidies relate to the regressive tax structures of natural gas and electricity, the exemptions for oil refineries and manufacturers of chemicals, the free emission permits and the tax reduction per electricity connection. Further details are found in the annex. When applying the first rate as reference, the subsidies on electricity generation are rather significant as well.

Table 1
Fossil fuel subsidies by type of taxes on energy products

Fossil fuel subsidy (in billions €)	Regular Rate	1st tax bracket
1. Explicit subsidies:		
Subsidy arrangement indirect cost compensation EU ETS	0.17	0.17
2. Implicit subsidies:		
2a. Tax exemptions		
Free CO2 emission permits EU ETS	2.07	2.07
Tax return for insitutions	0.03	0.03
Tax exemption natural gas use of gas and oil extraction companies	0.18	0.30
Tax exemption for electricity generation	0.78	7.04
Tax exemptions for the energy intensive industry	0.15	1.31
Tax exemption for oil refineries and manufacturers of	8.78	13.76
Tax exemptions for motor vehicles	1.12	1.12
Tax exemption for the use of kerosene in international	1.55	1.55
Tax exemption for the use of fuel in commercial shipping	1.92	1.92
2b. Variable rates		
2b1. Tax brackets		
Regressive tax structure natural gas & electricity	7.91	7.91
2b2. Tax rebates		
Tax rebates greenhouse horticulture	0.10	0.24
Tax rebates for motor vehicles	0.90	0.90
Tax reduction per electricity conncection	2.22	2.22
Total	27.87	40.54

4.2 Fossil fuel subsidies by industry branch (NACE)

When estimating the fossil fuel subsidies by industry branch, a few things stand out. Ultimately the largest amounts of fossil fuel subsidies are granted to Manufacturing with a 55 percent share when using the 1st tax bracket. Transportation and storage and Electricity, gas, steam and air conditioning supply both have a share of 10 percent.

Several exemptions apply for the iron and steel industry, as well as oil refineries and manufacturers of chemicals. These companies are large energy consumers, and most of this energy consumption is tax exempted, among which the freely granted ETS pollution permits. Fossil fuel subsidies obtained from the regressive tax rates are also to a large extent granted to Manufacturing. So this industry branch benefits both from tax exemptions and discounts.

Table 2

Fossil fuel subsidies by industry branch (in billions €)	Regular rate	1st tax bracket	%-share
A Agriculture, forestry and fishing	0.98	2.28	6%
B Mining and quarrying	0.35	0.47	1%
C Manufacturing	15.29	22.44	55%
D Electricity, gas, steam and air conditioning supply	0.51	4.24	10%
E Water supply; sewerage, waste management and remediation activities	0.18	0.19	0%
F Construction	0.52	0.52	1%
G Wholesale and retail trade; repair of motor vehicles and motorcycles	0.84	0.84	2%
H Transportation and storage	3.93	3.93	10%
I Accommodation and food service activities	0.21	0.21	1%
J Information and communication	0.31	0.31	1%
K Financial and insurance activities	0.08	0.08	0%
L Real estate activities	0.07	0.07	0%
M Professional, scientific and technical activities	0.09	0.09	0%
N Administrative and support service activities	0.19	0.19	0%
O Public administration and defence; compulsory social security	0.20	0.20	0%
P Education	0.11	0.11	0%
Q Human health and social work activities	0.28	0.28	1%
R Arts, entertainment and recreation	0.10	0.10	0%
S Other service activities	0.06	0.06	0%
T Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	0.00	0.00	0%
U Activities of extraterritorial organisations and bodies	0.40	0.40	1%
Households	2.22	2.22	5%
Unknown	0.94	1.31	3%
Total	27.87	40.54	100%

The %-share is based on the 1st tax bracket subsidy per industry branch as a share of the total fossil fuel subsidies calculated using the 1st tax bracket

4.3 Energy related taxation in the Netherlands

Table 3 provides an overview of fossil energy related taxes in the Netherlands. This information is obtained from the Dutch National Accounts. The table 4 shows that for natural gas and coal large shares of their use are tax exempted. The total exempted use is based on calculations of the various types of fossil fuel subsidies which relate to energy or coal tax exemptions. When looking at the natural gas use of companies, thus excluding households, the share of exempted use would be 69 percent.

Table 3
Fossil energy related taxes in the Netherlands (in million euros)

		ESA 2010	2018	2019	2020	2021	2022*
a.	Excise tax on petrol	D.21	4472	4574	3888	4044	3618
b.	Excise tax on other fossil energy products	D.21	3919	3887	3483	3604	3146
c.	CO2 emission permits (ETS)	D.29	261	524	443	488	1039
d.	Energy tax	D.21	5722	6697	6408	6963	3349
e.	Taxes on coal	D.21	2	1	1	1	1
f.	Aviation tax	D.21	0	0	0	69	163
g.	Taxes on purchases of motor cars and motor cycles	D.21	2270	2347	1501	1489	1477
h.	Taxes on motor car ownership	D.29/D.59	5807	5889	5928	6058	6100
	Total		22453	23919	21652	22716	18893

Source: Statistics Netherlands

Table 4
Total and exempted energy use in the Netherlands for different energy types (2021)

Energy type	Total use	Total exempted use	% exempted
Natural gas (mln m3)	39,618	20,677	52%
Electricity (mln kWh)	115,750	3,689	3%
Coal (mln kg)	9,436	9,367	99%

4.4 Comparison of the results

The estimated amounts of fossil fuel subsidies depend on a number of assumptions. What stands out from the results is the large difference between the fossil fuel subsidies calculated with the regular rate and the subsidies calculated with the first tax bracket as a reference. This is due to large differences between the various tax bracket rates: tax bracket 4 is more than 10 times lower than tax bracket 1. While the iron and steel manufacturing industry has a significant natural gas consumption, its effective tax rate, due to the regressive tax system, is almost zero (€0.036 per m3). Subsidies relating to the iron and steel industry therefore seem to be very small when using the regular reference rate, compared to the subsidy when calculated with the first bracket. The selection of an appropriate reference rate is a policy question and cannot be the outcome of official statistics.

Although Milieudefensie et al. (€37.5 billion per year) takes the first tax bracket as reference and the Ministry of Finance the regular rate, the estimates of the Ministry of Finance are much higher (€39.7 - €46.4 billion per year). CPB & PBL also estimated a lower total amount of €17.1 billion

when using the inventory approach. This difference is due to the fact that Ministry of Finance added fossil fuel subsidies on non-energetic use of mineral oils and those related to tax exemptions and reductions for vehicles. Another decision is whether or not to take into consideration price differences between closely substitutable products.

Tentative estimations quantify the implication of including the following cross product taxation differences:

- gas and electricity
- petrol and diesel
- petrol and LPG
- fuel oil and marine diesel.

As shown in the table 5 below, adding these cross product tax differences will lead to another 5.1 billion euros of fossil fuel subsidies. The corresponding estimations are based on tax rates per ton of CO_2 emitted.

Table 5

Sensitivity analysis of the results (in billions €)	Regular rate	1st tax bracket
Total amount of fossil fuel subsidies	27.87	40.54
Tax rate differences between products	+5.07	+5.078

5. Conclusions and recommendations

Sound debates and policies addressing fossil fuel subsidies require indisputable statistics explaining this phenomenon. Endless debates on the possible size of fossil fuel subsidies is probably not going to be very helpful. Even though countries are expected to report their fossil fuel subsidies by way of sustainable development goal (SDG 12.c), and even though the EC calls for a phasing out of fossil fuel subsidies, the outcomes presented in this report indicate that the calculation of fossil fuel subsidies may not be an indisputable indicator for monitoring and country comparisons.

The IMF (2023) calculates fossil fuel subsidies for a wide range of countries by using an external cost-based approach. The advantage of this approach is the common reference rate for each and every country which allows for inter country comparisons. The reference (first bracket and regular) rates addressed in this report does not allow for properly comparing the results between countries as these regular rates will expectedly differ between countries. A disadvantage of the IMF approach is the uncertain outcome of global warming and related social costs which cannot be captured by descriptive statistics either.

Particularly the implicit types fossil fuel subsidies are not straightforwardly observable but depend on a variety of analytical choices, such as the selection taxation arrangements and the reference rates needed to quantify tax exemptions and discounts.

The ultimate issue at stake seems to be a taxation of fossil fuels that puts into place the right incentives to phase out CO_2 emissions while maintaining an economy's competitiveness and keeping the homes of households comfortable. An alternative indicator that might be suitable for quantifying the actual taxes levied on CO_2 emissions is the effective carbon rates (OECD, 2021). In this indicator, taxes on fossil energy uses are estimated per unit of emitted CO_2. Such ratios may be calculated independently of a reference rate indicating the amount of taxes that should be put into place. The international environmental accounting standard (SEEA, 2012) may be the appropriate framework for calculating effective carbon rates, particularly by industries. These rates may be compared between the various industries in one country but also between the corresponding industries in different countries. Eurostat is currently advocating the compilation of effective carbon rates as a supplementary indicator to fossil fuel subsidies.

6. References

Eurostat (2013), 'European system of accounts', ESA 2010

European Commission (2023), 'Guidance document EHS 2023'

European Commission (2022), 'Guidance material for the Eurostat PEDS compilation (draft)'

IMF (2023) 'Fossil fuel subsidies: 2023 Update'

IPCC (2023) Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth, Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 35-115

OECD (2021) Brochure: Effective Carbon Rates 2021

Milieudefensie et al. (2023), 'Phasing-out fossil fuel subsidies in the Netherlands'

Ministerie van Financiën (2023), '25 Fossiele Subsidies', Miljoenennota 2024

Centraal Planbureau & Planbureau voor de Leefomgeving (2023), 'Afschaffing fossiele-energiesubsidies: eerder een hersenkraker dan een no-brainer'

UNEP (2019), 'Measuring Fossil Fuel Subsidies in the Context of the Sustainable Development Goals. UN Environment', Nairobi, Kenya

UNSD (2021), 'System of Environmental-Economic Accounting 2012 Central Framework'

UNSD (2009), 'System of National Accounts 2008'.

Annex: Explanation and estimation of the various types of fossil fuel subsidies, reference year 2021

A1. Explicit subsidies

A1.1 Subsidy arrangement indirect cost compensation ETS

A number of businesses in the manufacturing industry are granted a compensation for the indirect costs due to the elevating effects of ETS on electricity prices. This applies solely to certain branches in manufacturing that are particularly exposed to carbon leakage risk.[3] These compensatory measures take the form of a direct subsidy which is as such recorded in the Dutch national accounts [1].

Subsidy arrangement indirect cost compensation ETS	
Fixed amount	€173 million

A2. Implicit subsidies - exemptions

A2.1 Freely granted CO2 emission permits under the EU-ETS

To prevent the offshoring of polluting activities outside of Europe, certain amounts of permits under the ETS are issued for free. The amounts freely assigned will be scaled down in upcoming years. A share of 80 percent of the freely issued emission permits were granted to companies belonging to the group of largest CO2 emitters in the manufacturing branch of the Dutch economy. The annual average permit price (€54) is taken as a reference and multiplied with the number of freely assigned emission permits (38.3 million)[4].

Free CO2 emission permits under the EU ETS	
Estimated amount	€2,068 million

A2.2 Tax return for institutions

Churches and non-profit institutions are granted a tax return on half of their payable energy taxes on the use of electricity and natural gas. The amount is estimated by taking 75% of the natural gas and electricity use of 'Other service activities: Activities of membership organizations' (NACE S94) [2]. Half of the estimated use per bracket is multiplied by the corresponding tax rates to obtain the tax return. The institutions' energy use did not only correspond with the first tax bracket but also other tax brackets [3][4]. Therefore, it would not be sensible to calculate the fossil fuel subsidy with the first tax bracket as reference, as this will not be equal to the tax return.

Tax return for institutions			
Energy type	Fossil fuel subsidy	Energy use	Reference rate
Natural gas	€20 million	45 mln m3	€0.432 / m3
Electricity	€10 million	86 mln kWh	€0.115 / kWh

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[3] https://www.rvo.nl/subsidies-financiering/subsidieregeling-indirecte-kostencompensatie-ets
[4] https://www.emissieautoriteit.nl/actueel/nieuws/2021/07/08/nederlandse-emissieautoriteit-keert-383-miljoen-co2-emissierechten-uit-aan-nederlandse-bedrijven

Reference rates as shown in the tables refer to so-called effective reference rates which represent a weighted average in the case of multiple tax brackets.

A2.3 Gas and oil extraction companies

Oil and gas mining companies are exempted from energy taxes on natural gas used in their production processes. The amount is calculated by multiplying the use of natural gas by these companies [5] with the appropriate reference rates for natural gas. The CBS data on energy use per tax bracket [4] indicates that the amounts of gas consumed by extraction companies fall within the first tax bracket but this information does not seem to correspond with the data from the energy balance sheet. Therefore, the average rate of tax bracket 1 and 2 is chosen as regular reference rate.

Tax exemption natural gas use of extraction companies

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Natural gas (regular rate)	€180 million	689 mln m3	€0.261 / m3
Natural gas (1st tax bracket)	€299 million	689 mln m3	€0.434 / m3

A2.4 Electricity generation

To prevent taxation on both the inputs and outputs of electricity generation, the use of all fossil energy types in electricity generation [5] is exempted from energy taxes, coal taxes and excise taxes. These fossil fuel inputs include natural gas, coal, diesel, derived gases and refinery gas, ethane and LPG. For all gases we applied the reference rate for natural gas. Together, the exemptions make up a fossil fuel subsidy of €418 million with the regular rate, or €4144 million with the first tax bracket.

Energy tax exemption for electricity generation (natural gas)

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Natural gas (regular rate)	€308 million	8,515 mln m3	€0.036 / m3
Natural gas (1st tax bracket)	€3,693 million	8,515 mln m3	€0.434 / m3

Energy tax exemption for electricity generation (coal)

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Coal	€72 million	4,740 mln kg	€0.015 / kg

Energy tax exemption for electricity generation (other inputs)

Energy type	Fossil fuel subsidy	Energy use	Reference rate

Petroleum products (Diesel)	€ 6 million	11 mln liter	€ 0.530 / liter
Coke oven and blast furnace gas (regular rate)	€ 27 million	749 mln m3	€ 0.036 / m3
Coke oven and blast furnace gas (1st tax bracket)	€325 million	749 mln m3	€0.434 / m3
Residual gases (regular rate)	€ 4 million	111 mln kg	€ 0.036 / m3
Residual gases (1st tax bracket)	€48 million	111 mln kg	€0.434 / m3

A2.5 Cogeneration installations

In the Netherlands, cogeneration installations, which in the Netherlands are particularly found in greenhouse horticulture, generate both heat and electricity. The natural gas used in cogeneration installations to generate electricity is exempted from energy taxes. To calculate the corresponding fossil fuel subsidy, all natural gas used for electricity production [5] is used, excluding NACE-D: 'Electricity, gas, steam and air conditioning supply', as this natural gas use is already included in the exemption for electricity generation (A2.4).

Energy tax exemption cogeneration installations

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Natural gas (regular rate)	€357 million	6,673 mln m3	€0.040 / m3
Natural gas (1st tax bracket)	€2,894 million	6,673 mln m3	€0.434 / m3

A2.6 Energy intensive Industry

With the purpose of safeguarding international competitiveness, particularly iron and steel manufacturing industries in the Netherlands benefit from several energy tax exemptions on their energy use:

- natural gas in mineral and metallurgical processes.
- electricity in metallurgical and electrolytic processes, and in chemical reduction.[5]
- Coal and coal related products used in blast furnaces and cokes factories.
- The so-called dual use of coal for heating and other purposes which mainly applies to the cokes-, iron-, and steal industry.

The tax rates for natural gas are used as a reference for exempted coal products in blast furnaces and cokes factories as for the energy tax exemptions for mineral, metallurgical, electrolytic and chemical processes, data on exempted energy use is either lacking or unclear. A survey to

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[5] Chemical reduction includes the conversion of CO2 and water into hydrogen.

companies has been conducted to gather information on exempted use, but only few responded.[6] The current estimated energy use has accounted for all the natural gas and electricity used in (NACE) C24 and C25, and the natural gas use in C23 [5]. For electricity, a fossil based share of 63% is taken into account. The total fossil fuel subsidy for the energy intensive industry consists of €418 million with the regular rate and €1309 million with the first tax bracket.

Energy tax exemption mineral and metallurgical processes

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Natural gas (regular rate)	€45 million	1,242 mln m3	€0.036 / m3
Natural gas (1st tax bracket)	€538 million	1,242 mln m3	€0.434 / m3

Energy tax exemption metallurgical and electrolytic processes, and chemical reduction

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Electricity (regular rate)	€3 million	3,603 mln kWh	€0.001 / m3
Electricity (1st tax bracket)	€448 million	3,603 mln kWh	€0.124 / m3

Energy tax exemption coal products in blast furnaces and cokes factories

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Coke oven and blast furnace gas (regular rate)	€29 million	581 mln m3	€0.051 / m3
Coke oven and blast furnace gas (1st tax bracket)	€252 million	581 mln m3	€0.434 / m3

Energy tax exemption 'dual' use of coal

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Hard coal & brown coal	€71 million	4,627 mln kg	€0.015 / kg

A2.7 Oil refineries and manufacturers of petrochemicals

The following tax exemptions for oil refineries and the manufacturers of petrochemicals are in this report recorded as fossil fuel subsidies:

- Refineries (including naphtha crackers) and manufacturers of petrochemicals are exempted from taxes for the use of residual gases and oil products produced as refinery by products. This concerns a mix of residual gases, petroleum cokes, LPG and oil. In

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[6] CBS: Gegevensverwerving industriële vrijstellingen, projectnummer PR001511, 30 januari 2023

compliance with the Energy Taxation Directive, the Dutch government is not legally permitted to remove the tax exemption.

- Mineral oil products which are used as input into the manufacturing of (higher end) oil products are exempted from excise taxes.

- Mineral oil products that are non-energetically used, for example for the manufacturing of paint, are exempted from excise taxes.,. The same holds for naphtha and 'light' oils used for the manufacturing of plastics. Yet, each of these processes generate large amounts of CO_2 emissions.

- The non-energetic use of natural gas in the production of e.g. hydrogen or artificial fertilizers. The latter represents five percent of all natural gas consumption in the Netherlands.

When quantifying the corresponding fossil fuel subsidies, the tax rates of close substitutes are used for those products for which tax rates are omitting. For residual gases, the rate for natural gas is used as reference rate, converted to kilograms. The rate for coal is used as reference for petroleum cokes. Naphtha is a light oil, similar to petroleum, so the excise tax rate for light oils is used. Kerosene, gasoil, diesel oil and light fuel oil are medium types of oil products, so the excise tax rate for medium oils is applied. The excise tax scheme readily consists or tax rates for LPG and heavy fuel oil. The total fossil fuel subsidies for oil refineries and manufacturers of chemicals consists of €8780 million with the regular rate, and €13762 million with the first tax bracket as reference [5][6].

Tax exemption for the use of residual gases and oil products produced inside the refinery

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Residual gases (regular rate)	€178 million	4,087 mln kg	€0.043 / kg
Residual gases (1st tax bracket)	€2,138 million	4,087 mln kg	€0.523 / kg
LPG	€10 million	27 mln kg	€0.363 / kg
Petroleum cokes	€5 million	307 mln kg	€0.015 / kg

Tax exemption for the use of mineral oil products as inputs in refineries

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Natural gas condensate (regular rate)	€88 million	2,438 mln m3	€0.036 / m3
Natural gas condensate (1st tax bracket)	€1,057 million	2,438 mln m3	€0.434 / m3
LPG	€0.36 million	1 mln kg	€0.363 / kg
Fuel oil	€147 million	3,838 mln kg	€0.038 / kg

Naphtha	€308 million	375 mln liter	€0.821 / liter
Petrol	€6 million	7 mln liter	€0.821 / liter
Kerosene	€129 million	244 mln liter	€0.530 / liter
Gasoil, diesel oil & light fuel oil	€632 million	1,194 mln liter	€0.530 / liter
Other inputs	€209 million	395 mln liter	€0.530

Tax exemption non-energetic use of natural gas

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Natural gas (regular rate)	€127 million	3,513 mln m3	€0.036 / m3
Natural gas (1st tax bracket)	€1.524 million	3,513 mln m3	€0.434 / m3

Tax exemption non-energetic use of mineral oils

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Natural gas condensate (regular rate)	€59 million	1,645 mln m3	€0.036 / m3
Natural gas condensate (1st tax bracket)	€714 million	1,645 mln m3	€0.434 / m3
LPG	€497 million	1,367 mln kg	€0.363 / kg
Naphtha	€6.209 million	7,561 mln liter	€0.821 / liter
Kerosene	€18 million	34 mln liter	€0.530 / liter
Gasoil, diesel oil & light fuel oil	€11 million	21 mln liter	€0.530 / liter
Other petroleum products	€149 million	281 mln liter	€0.530 / liter

A2.8 Exemptions on the taxation of purchases of vans

Purchases of transport vans for businesses are exempted from purchasers' taxes (bpm in Dutch). The measure is not directly related to emission of greenhouse gases. However, the measure does make the purchase of a fossil vehicle more attractive and might in this way relate to diesel or petrol consumption. Based on this line of argumentation, the exemption of fossil fuel driven transport vans can be considered a fossil fuel subsidy. The fossil fuel subsidy is calculated by

taking the average transport van price of €30.100[7], the amount of business vans in the Netherlands younger than 1 year[8], and the rates for purchasers' taxes[9] for petrol and diesel combustion cars. [8]

Exemption on the purchase taxation of business vans	
Estimated amount	€587 million

A2.9 Other arrangements in vehicle taxation
There are several other relevant tax arrangements such as exemptions for fire brigade vehicles, old timers, vehicles for the disabled, as well as lower tax rates for camping vehicles or horse transport vehicles. Also these arrangements could indirectly lower the cost of using fossil fuels. Because of lacking data and practical reasons, we decided to copy the amount estimated by the Ministry of Finance for the year of 2023.

Other arrangements in vehicle taxation	
Estimated amount	€534 million

A2.10 Excise tax exemption for the use of kerosene in international aircraft
Kerosene used as a fuel for commercial aircraft is compulsory exempted from excise taxes according to the Energy Taxation Directive (ETD). Because kerosene has not been included in excise taxation, it omits a specific taxation rate. Kerosene is a medium oil, so the excise tax rate for medium oils will be used as a reference which is the same rate for diesel. [6]

Excise tax exemption for the use of kerosene in international aircraft			
Energy type	Fossil fuel subsidy	Energy use	Reference rate
Kerosene	€1,553 million	2,345 mln liter	€0.530 / liter

A2.11 Excise tax exemption for the use of fuel in commercial shipping
Fuel bunkering in commercial shipping is in consonance with the ETD mandatorily exempted from excise taxes. Marine diesel does not have a specific excise tax, so instead the rate for (regular) diesel is applied. Energy use within the borders of the Netherlands consists of the use of both inland water transport, Fishing and aquaculture. The energy use outside of the Netherlands consists of the bunkering of fuels for international shipping. [5][6][7]

Excise tax exemption for the use of fuel in commercial shipping			
Energy type	Fossil fuel subsidy	Energy use	Reference rate
Marine diesel	€1,561 million	2,947 mln liter	€0.530 / liter

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[7] https://www.vna-lease.nl/cijfers-en-feiten/autoleasemarkt-in-cijfers-2021
[8] https://www.cbs.nl/nl-nl/visualisaties/verkeer-en-vervoer/vervoermiddelen-en-infrastructuur/bestelautos
[9] https://www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/themaoverstijgend/brochures_en_publicaties/bpm-tarieven

Fuel oil	€354 million	9,232 mln kg	€0.038 / kg

A3. Implicit subsidies - variable rates

A3.1 Regressive structure of the energy tax on natural gas and electricity

The Dutch government maintains a so-called regressive tax structure for energy taxes with the objective of maintaining an equal playing field between the Dutch large-scale energy consuming businesses and their international competitors, item (d) in Table 3. The more energy is consumed, the lower the average tax rate will be. To estimate the potential tax revenue, estimated energy use of companies and households [5] are multiplied by the first bracket rate. This potential revenue represents the revenue in case everything was equally taxed under the first tax bracket. We assumed that the energy use of households only applies to the first tax bracket. This amount was subsequently subtracted from the actual energy tax revenue as obtained from the Dutch national accounts [1]. While considering the regressive structure of electricity taxes, only a fossil based share of 63% is taken into account. For natural gas use, the use of the greenhouse horticulture is subtracted to avoid double counting. For this industry a specific and reduced regressive tax system applies (A3.2). Moreover, the tax discount per electricity connection is subtracted from the potential energy tax revenue for electricity, as the actual tax revenue is also deducted with this amount.

Regressive tax structure for natural gas & electricity

Energy type	Fossil fuel subsidy	Energy use	Reference rate
Natural gas	€2,101 million	18,941 mln m3	€0.434 / m3
Electricity	€5,812 million	122,061 mln kWh	€0.124 / kWh

A3.2 Energy tax rebates for greenhouse horticulture (natural gas)

The Dutch greenhouse horticulture branch consists of a wider range of relatively smaller firms. Their consumption of natural gas used for greenhouse heating will dominantly fall under the first two brackets, resulting in a relatively high energy tax burden for these firms. To ease this burden, these firms are allowed to benefit from reduced first and second bracket tax rates. In return, these firms have to comply with a CO_2 cost settlement system, in which companies have to pay taxes for additional CO_2 emissions above a certain threshold. In 2021, greenhouse companies had to pay 6.3 million for the CO_2 settlement system[10], as they emitted more CO_2 than allowed. The fossil fuel subsidy is calculated by estimating the tax differential per tax bracket multiplied by the estimated amounts of natural gas consumed per bracket [3][5]. The 6.3 million paid for the CO_2 cost settlement system will be subtracted from the fossil fuel subsidy.

Lower energy tax rate Greenhouse horticulture (natural gas)

Energy type	Fossil fuel subsidy	Energy use	Reference rate

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[10] https://www.nieuweoogst.nl/nieuws/2023/11/16/glastuinbouw-moet-63-miljoen-euro-aan-co2-heffing-betalen

Natural gas (regular rate)	€97 million	867 mln m3	€0.151 / m3
Natural gas (1st tax bracket)	€244 million	867 mln m3	€0.434 / m3

A3.3 Reduced rates for motor vehicle taxes for business vans

Businesses benefit from a reduced motor vehicle ownership tax rate for transport vans. The fossil fuel subsidy is estimated by looking at the tax rate differences between for every fuel type and several weight classes. [11] [8]

Reduced rate for the ownership taxation of business vans	
Estimated amount	€895 million

A3.4 Deductible tax amount per electrical connection

Smaller energy consumers such as households who are not benefiting from the regressive energy tax system are compensated with an annual tax deductible amount for every electricity connection. Small consumers will benefit proportionally more than large consumers from this arrangement. The amount is calculated by multiplying the number of households in 2021 by the amount receivable (€462), and multiplying this with 63% to obtain the fossil based share.

Deductible tax amount per electrical connection	
Estimated amount	€2,224 million

A4. Other measures excluded from the CBS estimates

A4.1 Price differences between products

To compare possible tax advantages between the various substitutable energy commodities, taxed energy uses must be converted to kilograms of CO2 emitted by which tax rates can subsequently be converted to rates per kg CO2 emitted. The amount is subsequently estimated by comparing the potential revenue, e.g. with natural gas taxed under the tax rate for electricity (in terms of emissions), with the actual tax revenue. Energy taxes per emitted unit of CO2 are lower for natural gas than for electricity. Of course the amount of gas or electricity needed for e.g. one shower differs. For this reason, such calculations seem arbitrary (see 3.2.2). The 'fossil fuel subsidy' could also be calculated by including VAT as well. But VAT is only relevant for household purchases as VAT on business purchases is refundable. [1][5]

Lower energy tax rate of natural gas vis-à-vis electricity	

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[11] https://www.belastingdienst.nl/wps/wcm/connect/nl/auto-en-vervoer/content/hulpmiddel-motorrijtuigenbelasting-berekenen

Energy type	'Fossil fuel subsidy'	Energy use	Reference rate
Natural gas	€2,188 million	18,941 mln m3	€0.169 / kg co2

Variances in excise tax rates for diesel, petrol and LPG

Energy type	'Fossil fuel subsidy'	Energy use	Reference rate
Diesel	€2,765 million	6,687 mln liter	€0,36 / kg co2
LPG	€55 million	94 mln liter	€0.36 / kg co2

Variances in excise tax rates for fuel oil vis-à-vis diesel (in terms of emissions)

Energy type	'Fossil fuel subsidy'	Energy use	Reference rate
Fuel oil	€62 million	104 mln kg	€0.19 / kg co2

A4.2 VAT-exemption international passenger transport (shipping & aircraft)

While domestic flights and water transport are subject to VAT, international flights are not. What makes a VAT for international transport difficult to implement, is that passenger transport can only be taxed in the jurisdictions in which it took place.[12] For example, the Dutch government is only allowed to levy VAT on flights a far as the air space above domestic territory is concerned.

While passenger flights may not be subject to VAT, in recent years a specific aviation tax has been implemented in the Netherlands (see table 3 in this report). Milieudefensie et al. deduct the aviation tax from the estimated fossil fuel subsidy as derived from VAT exemptions. The VAT can only be taxed when the passenger transport takes place in or above the Netherlands. This cannot be easily calculated. The structure and rules of the VAT do not allow for this measure to be noted a fossil fuel subsidy.

A4.3 VAT-exemption kerosene

Kerosene supplied for aircrafts is taxed under the compulsory rate of zero. Implementing a higher VAT rate is not allowed under article 148 and will not result in higher prices, as the VAT is deductible. The deductibility assures VAT as a tax instrument is in fact irrelevant for business purchases of kerosene. This is why this VAT exemption is ignored in this report.

A4.4 Tax return for the use of natural gas as fuel for ships

Users of commercial ships using natural gas as fuel can request a return of energy taxes. There have not been any tax return requests in recent years. Therefore, this tax return has been ignored in this report.

A4.5 Investment deductibility for the exploration and extraction of natural gas in the North Sea

For the exploration and extraction of natural gas from the North Sea, 40 precent of the investment value may be deducted from the corporate profits. This seems to be an incentive for

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[12] 'Artikel 6c, eerste lid van de Wet op de omzetbelasting 1968 en artikel 48, btw-richtlijn'

the operationalization of new natural gas fields and as such a fossil fuel subsidy. However, this investment deductibility has not been observed in the year 2021.

A4.6 Subsidy natural gas storage

The Dutch government wants to secure natural gas supply by 'bridging' difference between (low) summer and (high) winter prices. Only Milieudefensie et al. (2023) took this measure into account. The subsidy for natural gas storage is seen as a fossil fuel subsidy, but does not apply to the year 2021.

A4.7 Energy price ceiling

A temporary measure to assure electricity and gas prices will not exceed a certain threshold was put into place till 2024. According to the European Commission's definition of EHS, temporary measures should also be considered a fossil fuel subsidy. The energy price ceiling does not apply to the year 2021 and is therefore not included in the estimates presented in this report.

A4.8 SDE++

Some of the expenses to stimulate sustainable energy production and the climate transition have a relation to the use of fossil fuels. An example is the subsidy to make biomass in coal plants. Subsidizing these practices could make the plant more profitable, which could then result in more production of coal. Milieudefensie et al. noted this as a fossil fuel subsidy. Because there seems to be no obvious relation between SDE++ and the use of coal, it will not be noted as a fossil fuel subsidy.

Data sources referring to Statline tables (in Dutch) of Statistics Netherlands
[1] National Accounts – Supply and use table
[2] Energy accounts (partly unpublished data)
[3] Aardgasverbruik bedrijven; belastingschijf, SBI2008
[4] Elektriciteitsverbruik bedrijven; belastingschijf, SBI2008
[5] Energy balance sheet; supply and consumption, sector
[6] Crude and petroleum products balance sheet; supply and consumption
[7] Energy balance sheet; supply, transformation and consumption
[8] Verkeersprestaties bestelauto's; kilometers, brandstofsoort, grondgebied